WHAT IS CLAIMED IS:

1. A method for determining illumination of surface points of an object in a scene from lighting sources comprises:

determining a first thickness map for a first lighting source for the scene, wherein the first thickness map includes a first plurality of thickness values of the object with respect to distance from the first lighting source;

determining a surface point on the object;

determining a first plurality of thickness values associated with the surface point on the object in response to the first thickness map;

determining a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

determining an illumination contribution from the first lighting source at the surface point in response to the first filtered thickness value.

2. The method of claim 1 wherein determining the illumination contribution further comprises calculating the illumination contribution in response to the first filtered thickness value and a thickness value relationship for the object selected from the group: thickness value versus absorption relationship, thickness value versus transmission relationship.

3. The method of claim 2 wherein the first plurality of thickness values of the object with respect to the first lighting source vary in direction away from the first lighting source.

4. The method of claim 3 wherein determining the first plurality of thickness values comprises determining a first plurality of thickness values of the object between the first lighting source and the plurality of surface points in the respective directions.

5. The method of claims 2 further comprising:

determining a second thickness map for a second lighting source for the scene, wherein the second thickness map includes a second plurality of thickness values of the object with respect to the second lighting source;

determining a second plurality of thickness values associated with the plurality of surface points on the object in response to the second thickness map;

determining a second filtered thickness value associated with the surface point on the object in response to the second plurality of thickness values; and

determining an illumination contribution from the second lighting source at the surface point in response to the second filtered thickness value.

6. The method of claim 5 further comprising determining a shading value for the surface point on the object in response to an illumination contribution selected from the group: the illumination contribution from the first lighting source, the illumination contribution from the second lighting source, the illumination contribution from the first lighting source and the illumination contribution from the second lighting source.

7. The method of claims 5 further comprising:

determining a shading value for the surface point on the object in response to the illumination contribution from the first lighting source;

determining a value for a pixel in an image in response to the shading value; and

storing a representation of the image in a tangible media.

8. The method of claim 7 further comprising outputting the representation of the image from the tangible media to one or more viewers.

9. The tangible media storing a representation of the image, wherein the image is determined according to the method described in claim 4.

10. A computer system comprises:

a memory configured to store a first thickness map associated with a first illumination source within a scene, wherein the first thickness map includes a first plurality of thickness functions of at an object versus distance away from the first illumination source; and

a processor coupled to the memory, wherein the processor is configured to retrieve the first thickness map from the memory, wherein the processor is configured to determine a surface point on the one object, wherein the processor is configured to determine a neighborhood of surface points on the one object in response to the surface point on the one object, wherein the processor is configured to determine a plurality of thickness values of the

at least one object in response to the surface point and the neighborhood of surface points and in response to the first thickness map, wherein the processor is configured to determine a filtered thickness value of the one object in response to the plurality of thickness values, and wherein the processor is configured to determine an illumination contribution from the first illumination source at the surface point in response to the filtered thickness value of the one object.

11. The computer system of claim 10

wherein the memory is also configured to store a relationship between thickness values of the one object versus a characteristic selected from the group: illumination attenuation, illumination transmission, and

wherein the processor is configured to determine the illumination contribution in response to the filtered thickness value and in response to the relationship.

12. The computer system of claim 11 wherein the relationship comprises a first relationship between thickness values of the one object and illumination attenuation in a first color component, and a second relationship between thickness values of the one object and illumination attenuation in a second color component.

13. The computer system of claim 12 wherein the first color component and the second color component are selected, without replacement from the color component groups consisting: {red, green, blue}, {cyan, magenta, yellow}.

14. The computer system of claim 12 wherein the first relationship and the second relationship are different.

15. The computer system of claim 14 wherein each of the first plurality of thickness functions of the object versus distance away from the first illumination source comprise a table of thickness values of the object versus distance from the first illumination source.

16. The computer system of claim 10 wherein the processor is also configured to determine a shading value for the surface point in response to the illumination contribution for the first illumination source at the surface point.

17. A computer program product for a computer system including a processor includes:

code that directs the processor to retrieving a first thickness map for a first illumination source for the scene, wherein the first thickness map includes an array of thickness functions, wherein each thickness functions comprises a relationship between thickness values of the object with respect to distance from the first illumination source;

code that directs the processor to determine a surface point on the object;

code that directs the processor to determine a first plurality of thickness functions associated with the surface point on the object in response to the first thickness map;

code that directs the processor to determine a first plurality of thickness values in response to the first plurality of thickness functions and in response to the surface point on the object;

code that directs the processor to determine a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

code that directs the processor to determine an illumination contribution from the first illumination source at the surface point in response to the first filtered thickness value;

wherein the codes reside on a tangible media.

18. The computer program product of claim 17 wherein code that directs the processor to determine an illumination contribution comprises code that directs the processor to determine the illumination contribution from the first illumination source at the surface point in response to the first filtered thickness value and a relationship for the object selected from the group: absorption versus thickness value, transmission versus thickness value.

19. The computer program product of claim 18 wherein the first plurality of thickness values comprise amounts of material of the object between the first illumination source and the surface point on the object and surface points in a neighborhood of the surface point on the object.

20. The computer program product of claim 18

wherein the relationship for the object comprises an absorption amount of a primary component of light versus thickness value; and

wherein the primary component of light is selected from the group: red, green, blue.

21. The computer program product of claim 19 further comprising code that directs the processor to determine the first thickness map for the first illumination source for the scene.

22. The computer program product of claim 20 further comprising:

code that directs the processor to determine a shading value at the surface point in response to the illumination contribution from the first illumination source;

code that directs the processor to determine a pixel value in response to the shading value; and

code that directs the processor to store a representation of a frame of animation including the pixel value in a tangible media.